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OBSTETRIC TABLES,

BY

G. SPRATT,

Surgeon-Accoucheur.

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Vol II

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TO : THE SECRETARY OF THE ARMY

FROM : THE CHIEF OF STAFF, ARMY

SUBJECT: [Illegible]

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OBSTETRIC TABLES:
COMPRISING
GRAPHIC ILLUSTRATIONS,
WITH
DESCRIPTIONS AND PRACTICAL REMARKS;
EXHIBITING ON
DISSECTED PLATES
MANY IMPORTANT SUBJECTS IN
MIDWIFERY.

BY
G. SPRATT, SURGEON-ACCOCHEUR.

SECOND EDITION,
CONSIDERABLY ENLARGED AND IMPROVED—IN TWO PARTS.

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THE HISTORY OF THE

ROYAL SOCIETY OF MEDICINE

AND OF THE MEDICAL PROFESSION

IN GREAT BRITAIN

AND IRELAND

BY

JOHN HENRY

WILLIAMS, ESQ., F.R.S.

LONDON

1857

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“ Although we possess a number of excellent elementary works on the practice of midwifery, we are deficient in graphic illustrations, which convey to the mind of the student a knowledge of its principles. The works of Hunter and Smellie are too cumbrous, too expensive, and want all those points of information which the industry and skill of medical men have, since their time, clearly elucidated. The work of Mr. Spratt will supply this want. The plates are well executed and ingeniously contrived to exhibit, in a clear and comprehensive view, all the most important objects which belong to the obstetric department. By an admirable arrangement, similar to that which has been adopted by Tuson in the display of the different succession of muscular layers, the natural positions of the parts are judiciously shown. Besides the delineations and explanations of the figures, the author has given some very judicious practical remarks. We most strongly recommend this book to the student and to the profession. It is a volume alike interesting to both, for it instructs the former, and recalls to the recollection of the latter many most important circumstances, which it is impossible for the memory to retain in vivid and fresh colours.”—*Med. and Surg. Journal*.

“ The desire of pointing out to the attention of the student whatever is calculated to facilitate his acquisition of knowledge, has induced us to notice several works analogous to the present. Those which we have hitherto mentioned have related to difficult points of anatomy, such as hernia, &c.—subjects which are unquestionably much more easily mastered by the beginner, with the aid of plans, which he can, as it were, dissect and replace at will, than by any other contrivance with which we are acquainted. Some of the more important and obscure parts of midwifery have received this kind of elucidation from Mr. Spratt, whose ingenious and well-contrived plans we have examined with great satisfaction. They represent the impregnated uterus and its contents under various circumstances, and are excellently contrived to fulfil the design for which they are intended.”—*Lond. Med. Gazette*.

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Fig 1 & 2.

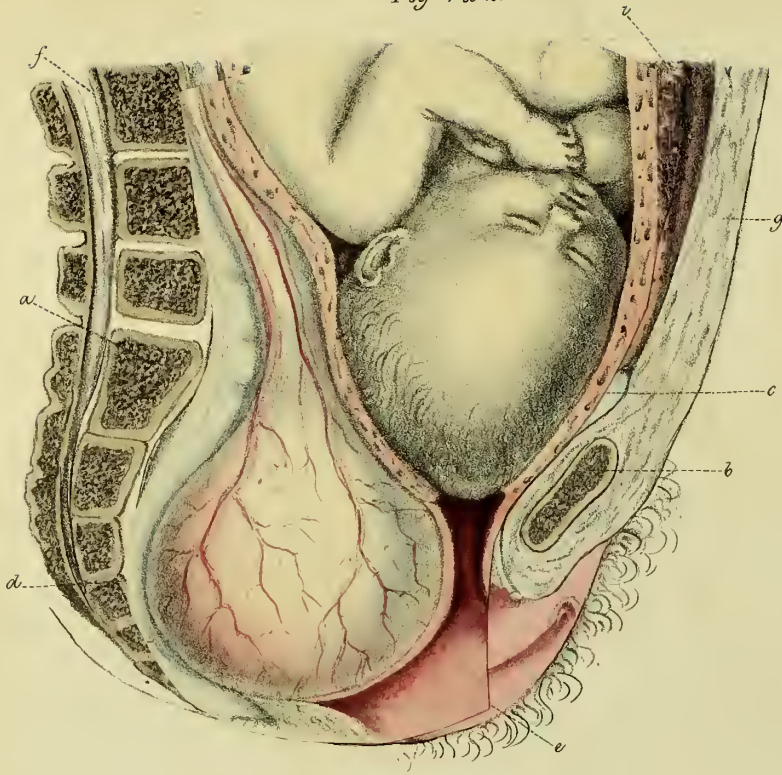


Fig 3.

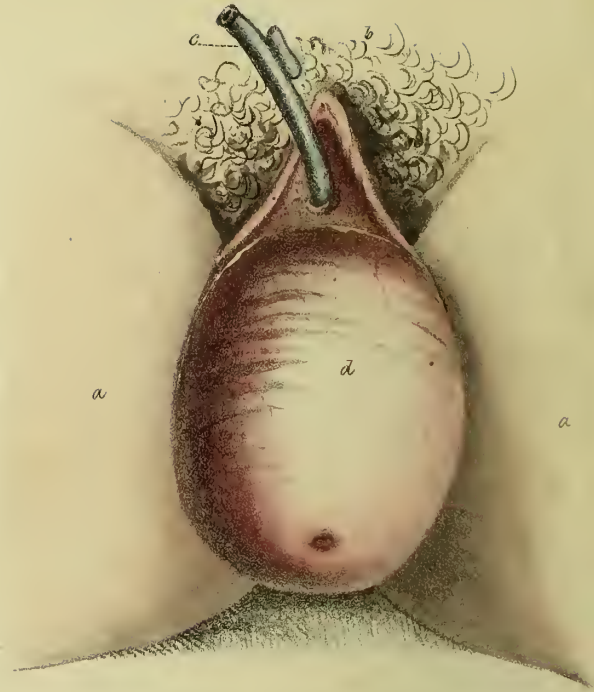


Fig 4 & 5.



Fig 6 & 7.



TABLE VII.

Fig. 1.—Represents a section of the pelvis, uterus, &c. to show a morbid enlargement of one of the ovaries, occupying nearly the whole cavity of the pelvis, and preventing the descent of the child's head. *a*, the bones of the lower part of the spine, sacrum, and coccyx; *b*, section of the ossa pubes; *c*, the bladder; *d*, the rectum; *e*, the vagina; *f*, medulla spinalis; *g*, muscles and integuments of the abdomen; *i*, cut edge of the uterus; *k*, the enlarged ovary.

The most frequent cause of enlargement of the ovaries is the disease called encysted dropsy. References to eighteen cases may be found in the tenth volume of the "Medico-Chirurgical Transactions." These tumors have been found of various sizes and degrees of firmness; hence it is obvious that tumors so situated must prove an obstacle to parturition in proportion to their bulk and compressibleness. In cases of very moderate or partial confinement of the pelvis from this cause, it will be prudent to trust to the efforts of nature* to expel the child; and we are told by Dr. Merriman, that "where the tumor was not very large nor very firm, this method has been successful. In the more formidable cases of obstruction from this cause, various methods have been recommended to preserve one or both lives. With a view of preserving the child, some have recommended the operation of turning, but this does not appear to have been successful. Others have taught, that in such cases the perforator should be employed without delay. Sometimes the tumors have been opened, but in several instances it has been necessary subsequently to have recourse to embryotomy." In cases of moderate obstruction from this cause, the occasional use of the forceps may be expedient, to shorten the duration of labours, which might otherwise become dangerous to the mother or child.

Dr. Merriman, after enumerating the different methods adopted in eighteen cases, says, "Upon the whole, the evidence we at present possess is more in favor of opening the tumors, when they contain a fluid, than of any other mode of procedure."

Fig. 2.—This figure represents a displacement or protrusion of the urinary bladder, occasionally met with during labour, and which proves an impediment to the birth of the child.

This protrusion consists in a descent into the cavity of the pelvis, of a portion (more or less) of the parietes of the distended bladder, which form an elastic tumor (as represented at *h*), situated either under the arch of the pubes, occupying the anterior part of the vagina, or on one

* See Davis's Operative Midwifery.

side*. The anterior protrusion is probably more frequently an obstacle to parturition than the lateral. We have met with one case of the former, and Dr. D. Davis says he has met with several, but not with one of the latter. We are told by Mr. Christian, "as the tumor is covered by the vagina, and its base diffused, there can be no danger of its being mistaken for the membranes enclosing the liquor amnii, nor does it, indeed, prevent the os uteri from being readily felt. If an error of this kind is at all to be apprehended, it is where the tumor is situated under the arch of the pubes." Dr. Merriman relates a case of the anterior protrusion, which was unfortunately mistaken for the head of a fœtus enlarged by hydrocephalus, and fatally punctured. Hence how much it behoves the inexperienced to pause and minutely examine every circumstance before they venture upon an operation. The remedial agent in these cases is the introduction of the catheter (to draw off the water), which will detect and cure this displacement.

Fig. 3—Represents a case of procidentia uteri, which forms a pendulous tumour, hanging between the thighs; the bladder occupies and forms the anterior part of it.

a a, the thighs; *b*, the mons veneris; *c*, the catheter; *d*, the anterior portion of the tumour formed by the bladder; on raising this part, the bladder is supposed to be laid open (when the unnatural course of the urethra in this displacement is clearly shown); *Fig 2*, the point of the catheter* in the bladder.

Fig 4, 5, 6, and 7—Represent sketches of face presentations. The letters refer to the same parts in all the four figures. *a a*, section of the lower part of the uterus; *b*, the rectum; *c*, the vagina; *d*, the left labia; *e*, the left nymphæ; *f*, part of the bladder; *g*, os pubis of the left side; *h*, section of the bones of the sacrum and coccygis; *i*, the perinæum; *k*, section of the muscles, &c. covering the bones of the sacrum, &c.

Fig. 4.—Face presenting with the occiput to the left side.

5.—Face presenting with the chin towards the pubis.

6.—Face presenting with the occiput to the right side.

7.—Face presenting with the chin towards the sacrum.

Remarks on these presentations follow our description of Table IX.

* See Dr. James Hamilton's Cases in Midwifery, p. 9; and Mr. Christian's paper in the Edinburgh Medical and Surgical Journal, vol. ix, p. 281.

† On the introduction of the catheter in this displacement, see TABLE III, part 1.

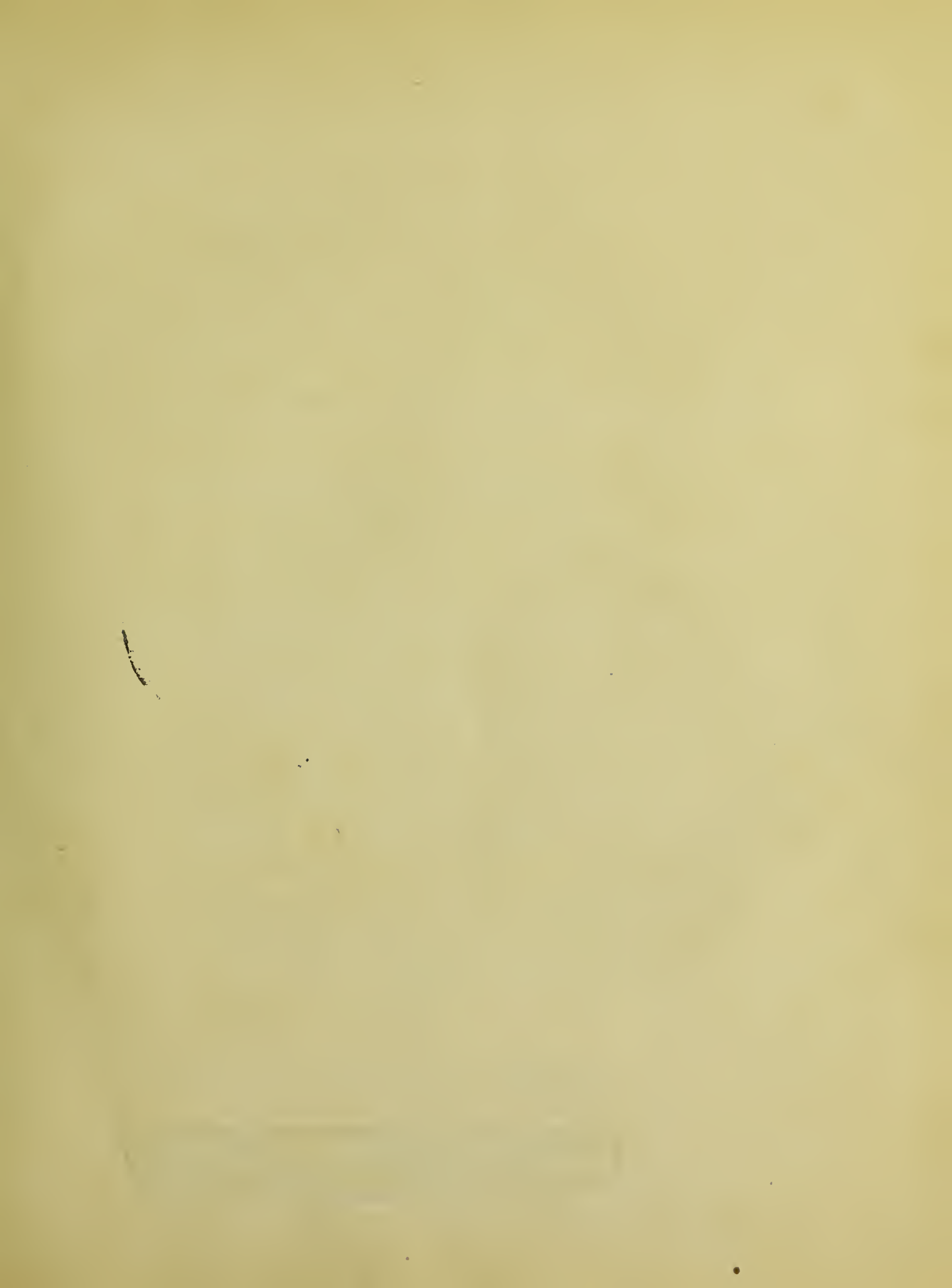
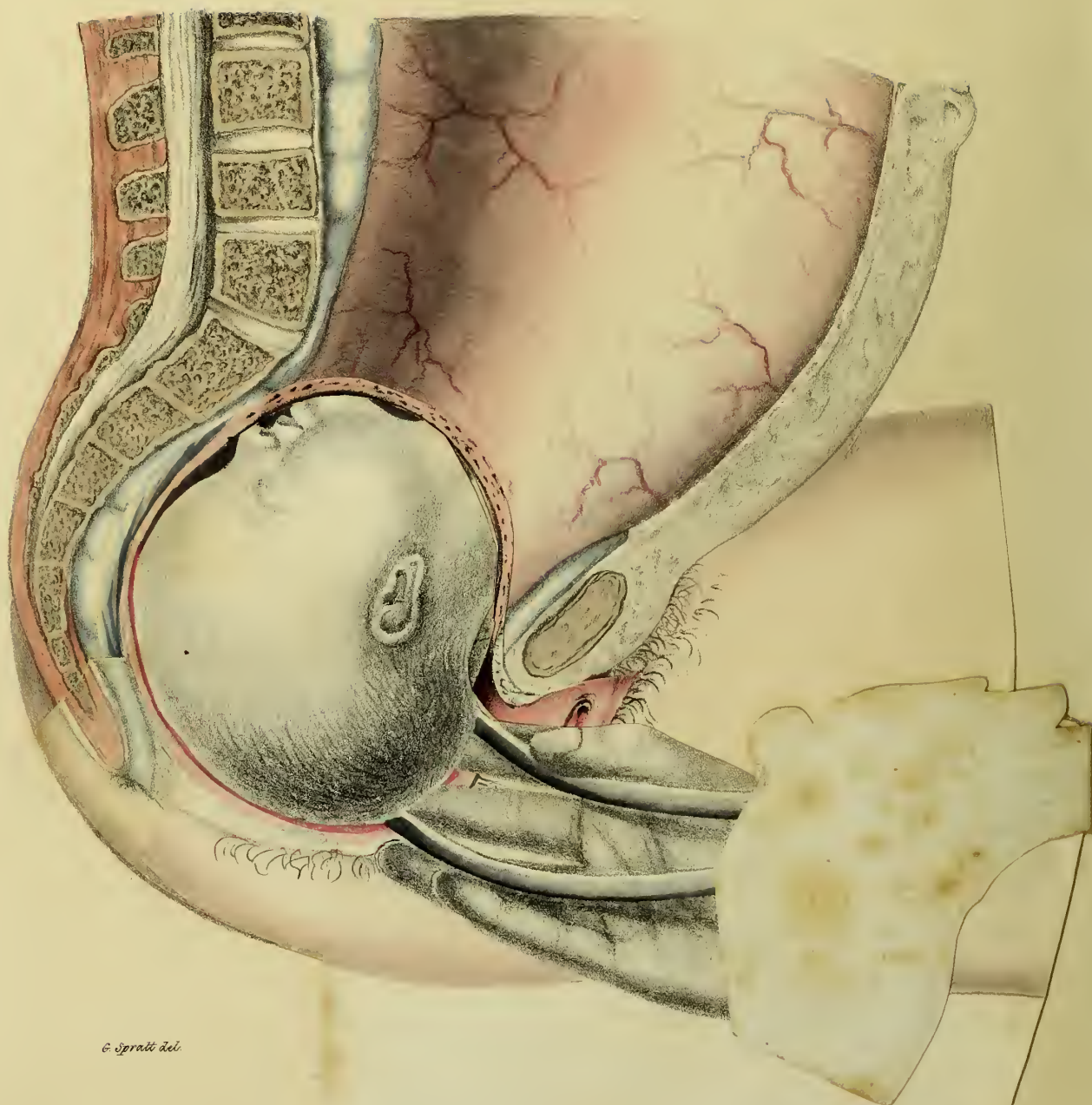


TABLE VIII.



G. Spratt del.

TABLE VIII.

Fig. 1—Represents a section of the parts of the pelvis, &c. as the preceding Table, with the mode of applying the left-hand blade of the forceps in the first position of the foetal head.

In this position it is seldom necessary to apply the forceps till the head has descended pretty low into the cavity of the pelvis, as here represented. The first part of the operation consists in introducing one or more fingers of the right hand into the vagina, between the ossa pubis and the head of the child to the ear, as conductors to the instrument; then taking the left-hand blade, (as here represented), the point of the blade is to be slowly conducted between the head of the child and fingers till it reaches the ear; it should then be gently raised up and applied over the child's ear; it is then, by a slow semi-rotatory motion, to be moved upwards along the sides of the pelvis till the lock reaches the external parts near the anterior angle of the pudendum.

* * We think it incumbent on us here to observe, that in our delineations of the forceps in this and the subsequent drawings, it is not to be presumed that we take upon ourselves to recommend any particular form of instrument; we are fully aware that teachers of midwifery and accoucheurs often give their preference to a particular instrument for general purposes. Some prefer the short forceps, some the curved, others again have their own peculiar form of forceps. Hence we have delineated different forceps in the various positions of the foetal head, not intending thereby to imply that the position of the head required that particular form of forceps—any other form of instrument might be used with equal advantage. So, with regard to the vectis or lever, we do not take upon us to recommend it, although, in one instance, we have represented it.

Fig. 2—Represents the mode of applying the second blade of the forceps, with the first blade moved backward to the inferior fourchette.

The general rule for the introduction of the second or right-hand blade* prescribes, to keep the blade first introduced in its place (*i. e.* the handle towards the pubis), with the two small fingers of the left hand, and introduce the forefinger of the same hand as high up as you can reach between the perinæum and the head of the child; then taking the second blade of the forceps in the right hand, the point is to be conveyed between the finger placed within the perinæum and the head of the child, till the lock shall touch the anterior part of the perinæum. The blade first introduced is then slowly withdrawn, and carried so far backward that it can be locked, with the second blade retained nearly in its first position.

In this figure, it will be observed, we have delineated the blade of the forceps first introduced as moved backwards towards the perinæum, and the two first fingers of the left hand represented

* Denman's Midwifery.

as passed into the vagina, obliquely over the shank, and anteriorly to the handle of the instrument already introduced (as near to the ear as they can reach), as conductors to the second blade. The second blade being then taken up with the right hand, and carried along the palm of the conducting hand, so that its points shall reach the tips of the fingers. It must then be carried forward, by a circuitous movement, over the right parietal, coronal, and temporal regions of the head, when it will be readily locked with its antagonist blade*.

Fig. 3—Represents both blades of the common short forceps introduced and locked, and placed backward against the perinæum.

When the *forceps* are locked, if the handles be in contact with each other through their *whole length*, they are *not* properly applied; for the bulk of the head is usually too great to allow the handles to touch each other, if the head be properly included within the bows. If the handles are very *far apart*, the points of the blades probably rest upon the ears; at all events, the head is not properly embraced by the *forceps*, and in attempting to act with them they will slip.

When acting with the *forceps*, the force at first used should be very moderate, but increased as occasion may require; yet, if the head advances at all, however slowly, with the force first applied, it need not be increased†. The traction at every stage of the operation must be made in a line with the axis of the pelvis. (See **Fig. 3**, Table I. B.) In proportion, therefore, as the head advances towards and through the inferior aperture of the passage, it becomes necessary that the handles of the *forceps* should be raised more and more towards the abdomen of the patient.

Fig. 4.—This figure represents the head of the fœtus considerably more advanced, the occiput emerging from under the arch of the pubis; and also the first action of the forceps (after they are applied and locked) made by bringing the handles, firmly grasped in one or both hands, slowly towards the pubes.

When the foetal head be so far advanced (as here represented), there is *seldom* any further necessity for the use of the forceps; and we are told, if there be sufficient pain, they may be withdrawn‡. On the removal of the forceps before the foetal head is born, there is some diversity of opinion. Dr. Denman says, “they should not be removed before the head is expelled, though their assistance be not required, lest the pains should cease, and we should be under the necessity of re-applying them.” Some eminent accoucheurs dissent from this rule, being convinced that it is very seldom necessary to allow the forceps to remain any considerable length of

* Elements of Operative Midwifery. † Merriman on Difficult Parturition, p. 107.

‡ Hogben's Obstetric Studies, p. 101.

time within the pelvis. As in the majority of forceps cases the fœtal head demands only a moderate assistance to change its position, and advance it beyond the point of obstruction, that overcome, the natural pains (if there be any) will expel the head without any assistance*.

In this and the subsequent table we have not delineated the long forceps, as they differ from the short forceps only in its dimensions, being three inches longer. This instrument is applicable in every case demanding the use of forceps, and is now recommended by many authors and lecturers.

Dr. Conquest says " this instrument is principally applicable to those cases of difficulty arising from deformity at the brim of the pelvis, in which the deficiency of space is from the sacrum to the pubes, but is so slight, that a little power beyond what the uterus can employ would expel living children that are now too often sacrificed. Also to those cases of hemorrhage, convulsions, &c. in which the head of the child, although it has entered the superior aperture of the pelvis, is not within reach of the short forceps, and in which delivery, being essential to the well-doing of the mother, is now usually effected by opening the head of the child.

The long forceps, when the head is above the brim of the pelvis, are to be applied, in most instances, over the occiput and face of the child, so that the convex edges of the blades may correspond with the concavity of the sacrum. When applied, the power may be exerted from side to side with moderate traction, in the direction of the axis of the brim of the pelvis, the handles being kept backwards towards the os coccygis, and, as the head descends, its most favourable position in relation to the pelvis must be secured ; and, during its descent, the instrument must be removed if the uterine contraction be sufficient ; and, if not, it must be re-applied, as the short forceps would be over the cheeks of the child.

* Elements of Operative Midwifery.

TABLE IX.

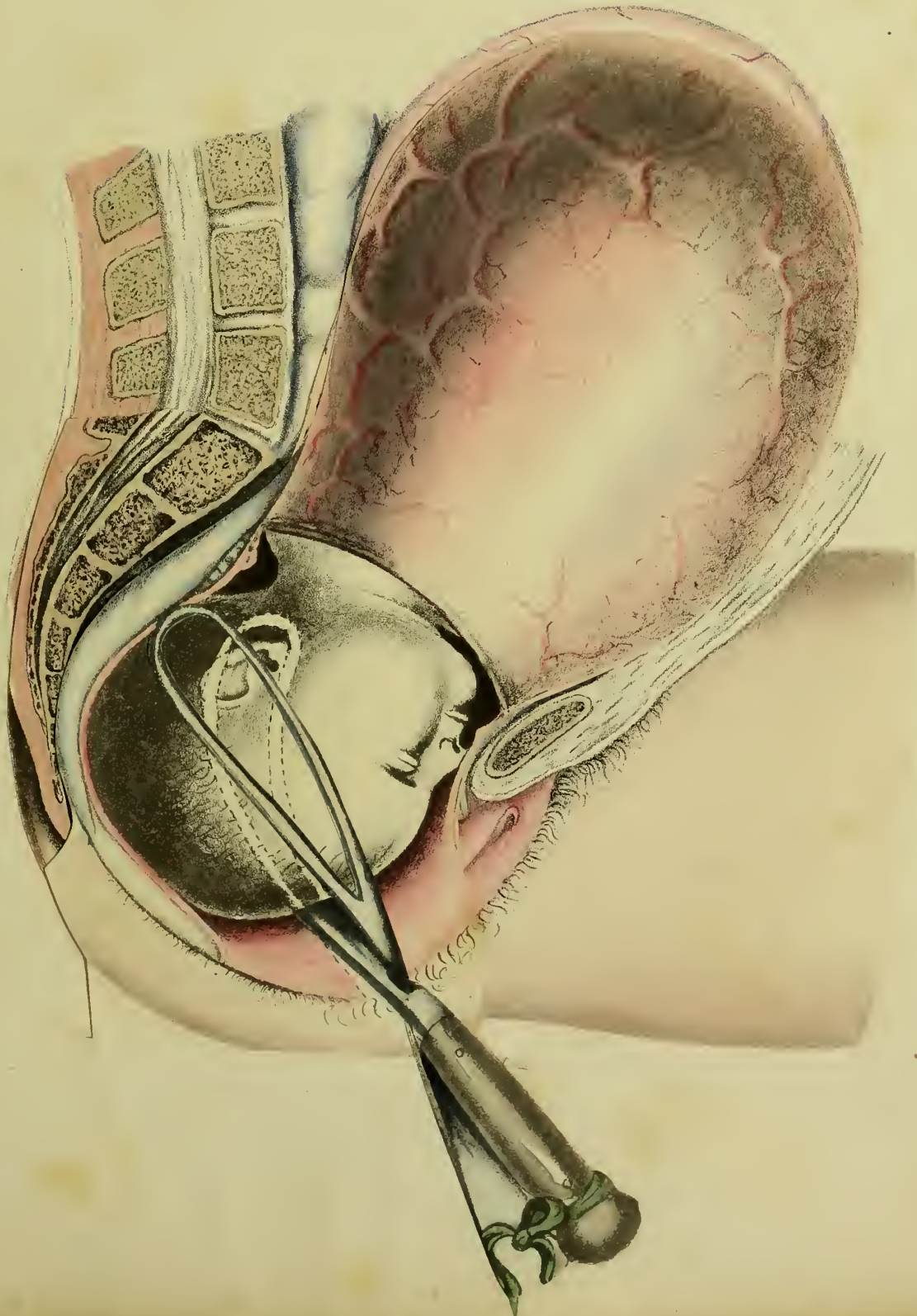
Fig. 1—Represents the same section of parts as in the preceding Tables, with a portion of the lower part of the uterus removed to shew the head of the child in the second position, viz. with the face towards the pubes. In this drawing the dotted lines are intended to represent the double curved forceps, and shew the different hold they have of the head compared with the common short forceps here represented as applied.

This is the most frequent of all the wrong presentations of the head. In this position the head is usually longer in passing through the pelvis than in the first position; but if the pelvis be well formed, and the action of the uterus strong, in the majority of cases the child will be expelled alive by the natural efforts. Should untoward symptoms arise, so as to demand artificial assistance, this position (when the head has descended low into the pelvis) may sometimes be rectified as proposed by Dr. Clarke, by laying two fingers on the cheek, and pressing gently during every pain, gradually turning the face into the hollow of the sacrum. Should this not succeed, the forceps or lever, or other means, must be resorted to, according to the exigencies of the case. In this presentation, if the lever be used, it may be applied over the mastoid process, in order to bring the chin below the pubes, when the case would be managed without much difficulty, and with little risk to the perinæum; or the lever may be passed behind the occiput, to assist the pains in advancing the occiput towards the os externum. The application of the forceps in this position of the head does not materially differ from the first position, described Table VIII. They are to be applied over the ears of the child; but when applied (as will be seen by the drawing) they have a different and less perfect hold; hence they are more apt to slip, and act with less advantage.

In this position, when the head is brought sufficiently low to distend the external parts, there will be great danger of laceration, unless the perinæum is cautiously guarded, and the head prevented from advancing too fast (if the pains be strong), until the os externum is gradually and sufficiently dilated.

Fig. 2.—In this drawing the right side of the uterus is removed to show the child in the act of parturition, with the face towards the right side of the pelvis (one ear to the sacrum, the other to the pubes); this may be denominated the third position of the foetal head.

TABLE IX.



In this unfavourable position, the head is (especially if large, or the pelvis somewhat small) liable to become arrested in its progress through the pelvis. Should there be occasion to use the forceps in this presentation, they must be applied over the ears of the child; but, to facilitate the expulsion of the head, it will be necessary to alter this position to the first or most natural position. This is to be effected by carrying the face into the hollow of the sacrum, by a gentle rotatory movement from left to right, to about one-fourth of a revolution, or what is called a quarter turn. The mal-position of the head being removed by this movement, it is probable the labour-pains (if there be any) may be sufficient to expel the foetus without further assistance.

Fig. 3.—Represents the forceps applied in the fourth position of the foetal head, *i. e.* with the face to the left side of the pelvis.

In this presentation the left ear may be felt behind the symphysis of the pubes; the head being arrested in its progress by its untoward position, it becomes expedient to alter the position by turning the face into the hollow of the sacrum. This is to be effected by reversing the rotatory movement described in the preceding position of the head. In this case, the face being turned to the left side, the movement must be made from the right to the left. The head being in this manner placed in the most favourable position, nature will in the majority of cases accomplish the delivery without further assistance. Hence the forceps may be removed, unless hemorrhage or other untoward symptoms demand a more speedy delivery.

Fig. 4.—The face in this drawing is represented as being carried into the hollow of the sacrum, by the rotatory movement described in the two preceding positions of the head; the case now becomes similar to a natural presentation, and may be managed as such in every respect according to circumstances.

When the face presents, it may be known, by the inequality of the presenting part, and the distinction of the nose, chin, &c. The management of these cases must, in a great measure, be left to the efforts of nature, as the child may pass by the pains only, after a tedious labour. But the features of the face are often amazingly distorted, and it is well known that long and severe pressure on the head in such presentations often destroy the child in the birth. Therefore, if assistance can be rendered either by the forceps or vectis to shorten the labour, so as to preserve the life of the child, the judicious use of such instruments must be acknowledged to be of real benefit.

Should symptoms require the use of the forceps, they must be applied over the ears of the child (as represented in fig. 4 and 6, Table VII.), and, in acting with them, extract from handle to handle, at the same time bringing the chin round to the symphysis pubis. Face presenting with the chin to the sacrum. (See fig. 7, Table VII.). Should the forceps be found

necessary, from the size of the head, or from floodings, faintings, &c. they must be applied over the ears, and the handles kept close against the perinæum. In this presentation the vectis may also be applied, as we have represented a blade of the curved forceps, i. e. over the ear and mastoid process. Face presenting with the chin towards the symphysis pubis. (See fig. 5, Table VII.) This is the most favourable of the face presentations.* In this case the vectis, if judiciously applied over the occiput,† will alter the position of the head; but should this not succeed, the forceps must be applied as in the former case.

* Denman's Introduction to Midwifery.

† Vide Hogben's Obstetric Studies.

TABLE X.

Fig. 1—Represents the same section of the parts as described in Table VI, with a section of the uterus, the right side being removed to show the fœtus in the act of parturition, the breach presenting with the back towards the fore part of the pelvis. The os uteri nearly dilated, the membranes broken, and the waters discharged, with the uterus contracted round the body of the child.

This presentation forms one of the first order of preternatural presentations, which include, also, the presentation of the hip, the knees, or one or both legs. This presentation may generally be known, by distinguishing the anus and organs of generation, and by the escape of the meconium. In the nates presentation, if the pelvis be well formed, and the child not particularly large, children are usually expelled by the action of the uterus. It has been recommended by some writers, to assist the delivery, when the buttocks do not pass readily through the pelvis, (there being urgent necessity for hastening the delivery,) by passing a finger on each side over the thighs to the groins, or, when the groins are beyond reach of the fingers, to introduce the blunt hook, by which to extract the child; or the descent of the nates may be assisted by the forceps, applied (one blade on each side) over the flank of the child.* There is yet another mode by which the nates may be extracted, which is by passing a fillet, or silk handkerchief over the bend of the thighs, close to the belly; by this the necessary extracting force may be very advantageously and more safely employed, than by the blunt hook.† When the nates are

* Dr. Blundell's Lectures.

† Vide Merriman's Synopsis.

TABLE X.



brought through the os externum, the case becomes a crural presentation ; and the direction of the toes, and all other circumstances requiring attention in presentations of the feet, must be attended too.

Fig. 2—Represents the child presenting with one hand and foot.

This mixed presentation is very rarely met with, but we have introduced it to caution junior practitioners to avoid the error of mistaking a superior extremity for an inferior : this error has occurred. The crural or foot presentation is the most simple, and often the safest to the mother, of any of the preternatural presentations ; but the life of the child is often placed in considerable danger from the compression of the navel cord, after the body of the child has passed through the pelvis. Hence, so soon as the body is born, the object of the accoucheur is to facilitate the head through the pelvis with all convenient speed. In order to accomplish this, it becomes necessary that the head of the child should occupy the hollow of the sacrum, after it has passed the superior aperture of the pelvis. To ascertain the position of the head, we must examine the feet ; if the toes are turned towards either *sacro-iliac synchondrosis*, the fœtus is already in the proper position ; but if the toes point to the *symphysis pubis*, the head is then in an untoward position, because it cannot adapt itself to the form of the pelvis. It will therefore be proper, if the head be in a wrong position, so soon as the nates have passed through the os externum, to grasp the nates and thighs (previously wrapped in a warm cloth, to prevent the fingers from slipping), and during a pain to give such an inclination to the child as will incline the face towards the sacrum.* The arms should then be cautiously brought down, one after the other ; the head is then to be extracted as expeditiously as the necessity of the case may need ; if the pulsation in the string become weak or cease, the case becomes urgent, and without waiting for natural pains, the extraction must be made ; but so long as a pulsation is felt, there is no occasion for hurrying the delivery.

Fig. 3—Represents the presentation of the arm, which forms one of the second order of preternatural presentations, according to Denman and others. This order also includes the presentations of the shoulder, and the more rare presentations of the back, or belly, or sides.†

In either of these presentations it is necessary to turn the child and deliver footling, it being impossible for a full-grown fœtus to pass through

* Vide Dr. Blundell's Lectures.

† Madame Boivin, in her *Memorial de l'Art des Accouchemens*, has given delineations of those positions ; but as, in 20,517 cases delivered at the Hospice de la Maternité at Paris, no instance of such presentation occurred at the full period of gestation, we have not thought it necessary to swell the present work by delineating them.

the pelvis in either of the above positions. On the operation of turning, see Table VI. B. The necessity of turning in these presentations is universally admitted, and the more speedily this is accomplished, when the os uteri is sufficiently dilated (either naturally or artificially, as the case may require) to admit the hand into the uterus, the more easily and safely will the operation be performed.* Having obtained room to pass the hand through the os uteri, rupture the membranes (should they not have been previously broke) by pressing a finger firmly against them, the hand will then come in contact with the limbs or body of the fœtus. The hand is then to be carried forward till it reaches the feet, which should be carefully drawn down along the belly of the child, and as the feet are brought lower, the presenting arm will be retracted; when the feet are brought through the os externum, the case becomes similar to a crural presentation, and must be managed as such.

Fig. 4.—Represents a shoulder presentation; the management of this case is by turning the child, as described in the preceding figure.

Fig. 5.—Represents the fœtus in the natural position seen through the amnion and waters; the funis presenting with the membranes unbroken.

When the funis presents, the most usual part of the fœtus beyond it will be found to be the head (as represented in the drawing), the nates or feet. Formerly it was supposed that, whenever the funis presented, the fœtus lay across the pelvis, with the umbilicus over the os uteri; and M. Maygrier supposes the descent of the funis to indicate a presentation of the belly.† Smellie has also represented (in his plates) the descent of the funis as accompanied with the presentation of the abdomen; but the presentation of the abdomen is extremely rare; whereas presentations of the funis are by no means uncommon, and, when occurring, usually precede the head, nates, or foot. When the funis presents, the child's life is always in danger; for if much pressure be continued on the funis for the space of a few seconds, the child becomes languid; and if the circulation be suppressed for one minute, the child is in the utmost danger. Hence, attention must be paid to the pulsation in the funis. If, upon a first examination, no pulsation is to be felt in the funis, the child is already dead, and the case must be managed according to circumstances,

* In ordinary cases, if the os uteri be dilated to the size of a crown piece, and the soft parts in a state of relaxation, the sooner the operation is commenced the better.

† Vide Méthode pour manœuvrer les Accouchemens, 1804, p. 49.

without regard to the funis ; but if there be a pulsation in the chord, we are assured the child is yet living. Various modes have been proposed by different practitioners for replacing the protruded cord, but not one of which is likely to succeed in every, or even in the majority of cases ; for the funis is generally forced down again on the pain returning.* When the head is low down in the pelvis, it may be prudent sometimes to hasten the delivery (if the child be living) by means of the forceps. “ If the breech present, it may be expedient to bring down one or both the inferior extremities at a proper time, taking care that the funis be not entangled between the legs of the infant.” Should the upper extremities present with the funis, recourse must be had to turning, if the child be living or dead (the position of the child demanding the operation of turning independent of the funis). We would say, were we called to a case, in which the os uteri was very considerably dilated, *as represented in the drawing*—the membranes unbroken—the *funis pulsating strongly*—the head beyond it—we would rupture the membranes, gently introduce the hand, and turn the fœtus ; or should the membranes be broken, and our efforts to return the funis prove ineffectual, we would turn, provided the funis *pulsated*,† and circumstances peculiarly favorable to turning, viz. the passages so relaxed and dilated as to admit of the easy introduction of the hand, and the pelvis capacious—if, on the contrary, the pulsation in the cord should have ceased, the case should be left to the efforts of nature.

* Mr. Hogben (vide *Obstetric Studies*) recommends, after the funis has been carried as far as possible above the brim of the pelvis by the fingers or some other contrivance, to introduce a piece of sponge, so as to keep the funis from sinking. Dr. Davis (see *Elements of Operative Midwifery*) recommends fixing the funis by means of thread to the point of a thin, flat plate of elastic steel, fixed in a wooden handle, and carrying the point of the instrument above the head of the child, out of the way of pressure. Dr. Mackenzie succeeded by tying the prolapsed funis in a small leather bag, and carrying it beyond the head of the fœtus.

† Dr. Conquest very justly observes, “ that all the advantage proposed to be gained (by turning) is on the part of the child, the mother’s life not being endangered by a presentation of the funis ; consequently, as the operation of turning is sometimes destructive to the mother, it ought never to be performed merely to save the life of the child.”

TABLE XI.

Fig. 1.—The abdomen laid open to show a front view of the gravid uterus at the full period of pregnancy. *aaaa*, the peritoneum lining the parietes of the abdomen; *b*, a portion of the omentum covering the small intestines; *c*, part of the small intestines; *dd*, the round ligaments of the womb; *ee*, the fallopian tubes: on the left side little more than the beginning of the tube is seen, the rest running down behind the womb: on the right side, the middle part only is exposed, the beginning being concealed by the intestine which lies upon that part, and the end or fimbriæ being covered by the spermatic vessels.

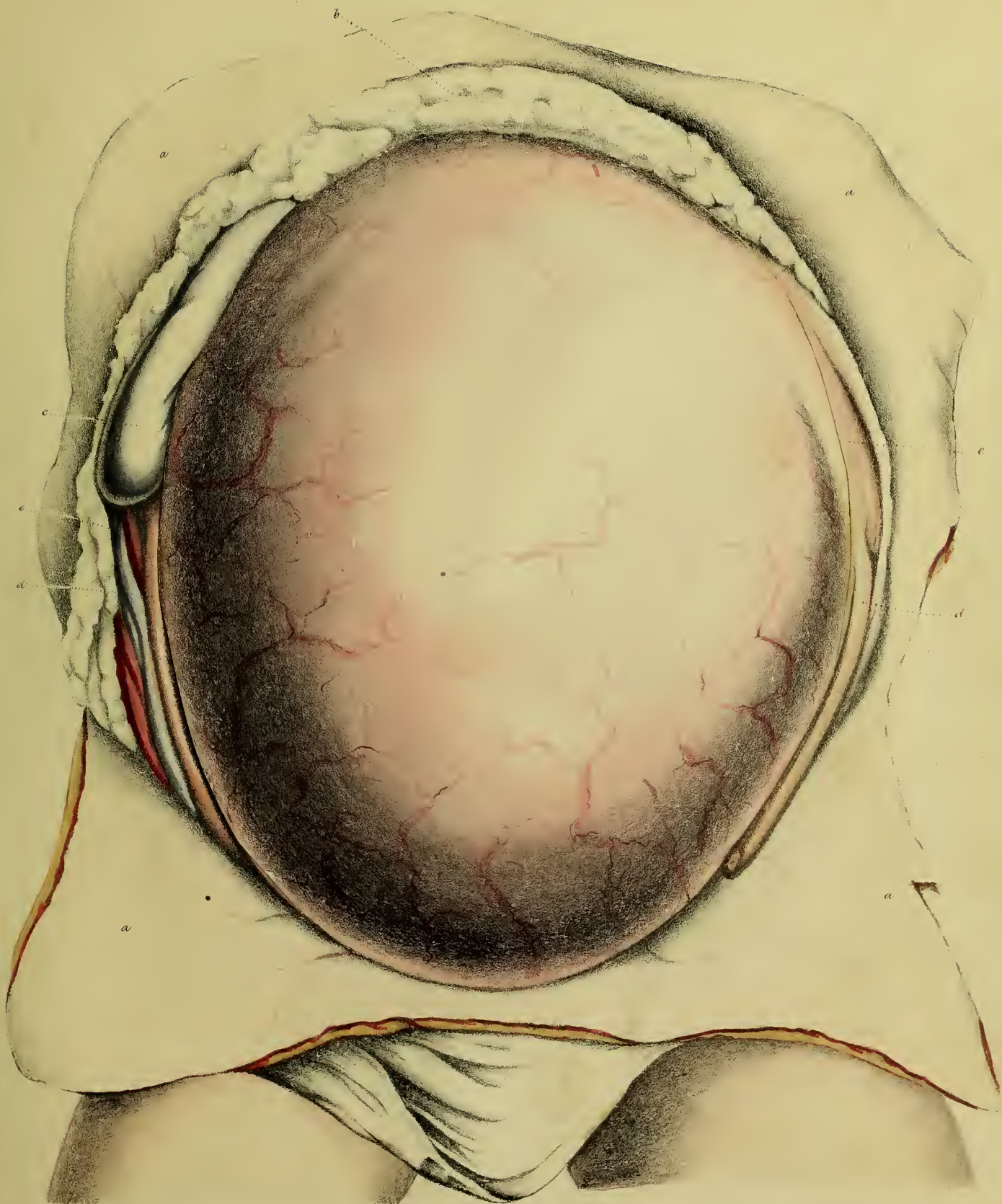
The fundus of the impregnated uterus at the period of between two and three months is even with the brim of the pelvis; about the latter end of the third or fourth, but sometimes a little later, the uterus advances above the brim, and is then readily perceived by the hand through the abdominal muscles, &c. Between the fourth and fifth month the fundus is between the pelvis and navel; at the sixth, as high as the navel; at the seventh month, between the navel and scrobiculus cordis; in the eighth month, up to the scrobiculus cordis. The fœtus, at the full period of utero-gestation, weighs on an average from six to nine pounds, the placenta little more than one. The liquor amnii varies so considerably, that it is difficult to form an average quantity; but we may say that the quantity generally contained in the membrane is from eight ounces to sixteen. When it *exceeds* three or four pints, it may be considered excessive, and is then frequently the cause of lingering labours, from over distension of the uterus.* Cases are on record in which the liquor amnii has measured five and ten pints; and when the fœtus is diseased, the liquor amnii occasionally far exceeds the above quantity.

In the early stages of gestation, the quantity is larger in proportion to the size of the uterus than afterwards. The liquor amnii is sometimes of a greenish cast, often of a milky appearance, and at other times of a yellowish colour. It contains water, albumen, carbonate and muriate of soda, and phosphate of lime.

The membranes of the ovum become of a firmer texture towards the end of pregnancy. Occasionally they are found at the time of labour unusually rigid and thick, and thus occasion a protracted delivery. Cases are on record in which the membranes have exceeded an eighth of an inch in thickness.† When the membranes have not been artificially ruptured, (and as a

* Should this case be very obvious, the membranes may be punctured, but the necessity for this *very rarely* occurs; and certainly not until the membranes distended with fluid have fully performed their office of dilating the os uteri and the passage to the os externum. (Conquest.)

† Vide Merriman's Synopsis.





general rule of practice they never should be,) and have withstood the action of the uterus, the whole ovum has been expelled at once.

Fig. 2.—The tunica decidua, a tender lacerable substance or membrane, secreted by the uterus, and forming the outer layer or coat of the ovum. In the earlier months of utero-gestation, it may be easily separated into two laminæ: the one in contact with the uterus, named *tunica decidua uteri*; and the other, from being reflected on the first (and covering the chorion), the Tunica decidua reflexa. After the fourth or fifth month, these two laminæ become, as it were, identified, and no longer separable.

Fig. 3.—The chorion, a dense, thin, smooth membrane, connected with the decidua as far as the edge of the placenta; it is then reflected over the surface of the placenta, which is opposed to the fœtus, and continued over the cord.

Fig. 4.—The amnion, a thin, transparent, dense membrane, lining the chorion (through which the fœtuses are seen). The amnion is smooth and polished next the fœtus, and destitute of vessels; it encloses the fœtus and liquor amnii, and assists in dilating the mouth of the uterus at the period of labour.

Fig. 5.—Represents a plural conception, each fœtus enveloped in separate membranes.

Twin cases usually terminate with safety both to the parent and children. It is the duty of the accoucheur invariably to ascertain if there be a second child before leaving his patient. After the birth of one child, the existence of one or more remaining in utero may be ascertained by external and internal examination. The external proof is the size and consistence of the abdomen, the parietes of which, if there be another child, remain nearly as tense as before the expulsion of the first; but this is not invariably conclusive, because the uterus may remain so uncontracted from other causes, as entirely to occupy the cavity of the abdomen. After applying the hand to the abdomen, or a finger or two in the vagina, should there remain any doubt, it will be prudent to pass the whole hand into the vagina, rather than leave his patient under any uncertainty. On the management of twins some diversity of opinion exists, as to whether the birth of the second should be purely artificial or left to nature. Several cases are on record where the second child has been retained many hours, or days, and even weeks,

without mischief*. Hence it has been supposed by some that the birth of the second child might be left to an indefinite period, provided no untoward circumstance should supervene to render artificial interference necessary. Others again, in anticipation of danger, proceed to deliver the second child immediately after the birth of the first. But the most experienced accoucheurs wait a certain time, (from one to four hours,) provided the first child was delivered by the natural efforts, and no untoward circumstance, as convulsions, hemorrhage, &c. should take place. But if the child should present in a wrong direction, it has generally been considered expedient to extract it by the feet with as little delay as possible. If also the first labour have been preternatural, dangerous, or difficult, it is with some an additional reason for delivering the second child as expeditiously as circumstances will permit.

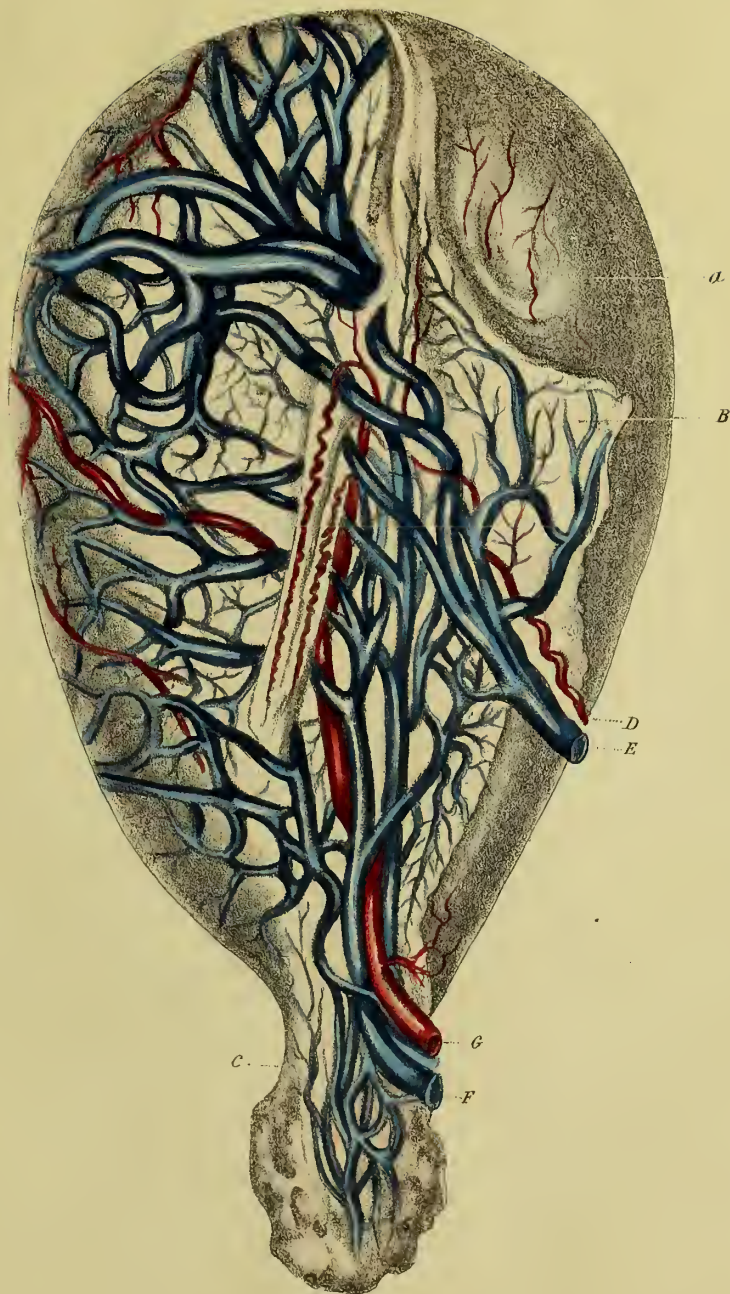
In some cases, it may be sufficient merely to rupture the membranes, in order to bring down the feet, or to render such assistance as the individual case may require.

* Vide Medical and Physical Journal for April 1811.

TABLE XII

Represents an injected uterus at the full period of gestation (about half its natural size), intended to illustrate the enlarged size of the vessels, their distribution and anastomosing with each other.

TABLE XII.



A Side view of an injected uterus to show the blood vessels, the outer stratum or peritoneal coat being removed except at the back part *a*.

B The tube behind which the ovary lie concealed.

C The neck of the uterus.

D The Spermatic artery.

E The Spermatic vein.

F The Hypogastric vein.

G The Hypogastric artery.



TABLE V.B.

ILLUSTRATING PLACENTA PRESENTATIONS, ADHESION OF THE PLACENTA, &c. &c.

Fig. 1—Represents the abdomen and uterus laid open, (the anterior part of the uterus being removed, to shew the placenta, partially situated over the cervix uteri). The fœtus is seen through the amnion. The operator's hand is represented as introduced into the vagina, about to rupture the membranes; the direction of the fingers in the vagina are represented in outline.

- A.A. The abdominal muscles, integuments, &c. turned back.
- B.B. The cut edge of the uterus. C. The placenta.
- D. The fœtus. E. The hand of the operator. F.F.F. The fingers in the vagina.

When the placenta is situated over the cervix uteri, very alarming and dangerous flooding commonly occurs, from about the sixth or seventh month to the full period of gestation; and no woman can be said to be free from danger until she be delivered: hence the interposition of art is demanded, and must be timely applied, or the woman will be lost: and we are told these cases ought never to be trusted to the powers of nature.*

The manual assistance required in these cases, is to deliver the woman as expeditiously as the urgency of the case may demand. The precise time when the patient ought to be delivered must depend in every individual case upon the *quantity* of blood lost and the *effects produced*. When the delivery is determined upon, (the usual means for suppressing hemorrhage having failed), the operation should always be performed with the utmost deliberation. When the fingers reach the placenta, it is of little consequence whether we perforate it, or insinuate the fingers on one side till we come to the edge; though the latter is generally to be preferred, and when the os uteri is only partially covered with the placenta, (as here delineated), the hand may be passed by its edge to the membranes without difficulty, which is preferable to boring through the substance of the placenta.† So soon as the hand has attained admission into the uterus, the operation of turning is to be performed, under the guidance of the direction given under the operation of turning, (see Table VI). In bringing down the child, (as in all preternatural cases), it should be done gradually; the pressure of its body, as it advances, will stop the flooding; and should there be pains, the obstetrician must extract at such times, resting between; but if there be no pains, it may be proper to rest at intervals; for, by hurrying the delivery, the woman may be so much fatigued as to be in danger of instant dissolution; the flooding being stopped by the child's

* See Conquest's Outlines, Denman's Aphorisms, &c.

† Ryan's Manual, &c. Blundel's Lecture, &c.

body, the more immediate danger is checked; the head of the child being suffered to remain a little time in the vagina, will give the uterus opportunity to contract on the placenta, by which means it will be sooner expelled, and the flooding stopped.

The placenta, when situated over the os uteri, is much thicker than in common, but less in circumference. When examination takes place, particular caution should be observed, that coagulated blood be not mistaken for the placenta.

Fig. 2—Represents the same section of the parts, with a delineation of the placenta, situated directly over the os uteri.

In this situation of the placenta, it may be required to perforate the substance of the mass with the fingers, and to pass the hand to the feet of the child, and bring them down through the aperture.

Fig. 3—Represents the hand introduced into the uterus to remove the placenta, the funis being separated.

This accident, (the separation of the funis), may arise from great force being used in extracting the placenta; but sometimes it takes place when very gentle force only has been used; the funis being small and of a flimsy texture, or not being firmly united. The separation of the funis may be attended with some inconvenience to the young practitioner, should the placenta not be expelled by the action of the uterus in due time, (or if attended by flooding), being deprived of his immediate guide by the loss of the funis. But no great difficulty will be found by the operator who has a proper knowledge of the anatomy of the parts; the hand being cautiously introduced into the uterus, the placenta is to be gently withdrawn in the direction of the axis of the pelvis.

Fig. 4—Illustrates the detention of the placenta, caused by *adhesion* between the uterus and placenta.

This adhesion arises in consequence of the deposition of coagulable lymph from inflammatory action, which may have existed during gestation, probably caused by some external injury.* The adhesion is most frequently only partial, but sometimes unites the whole surface of the placenta to the uterus.

The unaided efforts of the uterus, as Dr. Conquest very justly observes, can never detach and expel the placenta under these circumstances; hence the interposition of art becomes necessary for its removal from the uterus. The hand of the obstetrician must be carefully introduced into the uterus, and, feeling for the edge of the placenta, cautiously and deliberately insinuating one, two, or more of his fingers between the placenta and uterus, slowly and tenderly separate the former from the latter. The hand should not be withdrawn until the separation is completely effected and uterine action excited.

* Vide Ramsbotham.

Fig. 5—Represents detention of the placenta, caused by irregular or spasmodic affections of the muscular fibres of the uterus, constituting the hour-glass contraction.

Spasmodic contraction of the muscular fibres of the uterus may occur either in the circular or longitudinal ones; when in the former, it produces either the hour-glass contraction, dividing the uterus into two cavities, (as represented in the drawing), or closes the cervix uteri, from which cause the placenta is detained. The management, in these cases, consists in allaying the spasmodic action, by the exhibition of an anodyne: from 40 to 60 minims of tincture of opium will generally have the desired effect; and, usually within half-an-hour, the constricted part becomes relaxed and dilatable, and the hand may be cautiously introduced into the uterus through the stricture.

TABLE VI. B.

THIS TABLE IS INTENDED TO ILLUSTRATE THE OPERATION OF TURNING.

Fig. 1—Represents a front view of the pelvis and uterus, the anterior portion of the uterus being removed to shew the situation of the fœtus, with left arm presenting, also the hand of the operator in the act of grasping the feet.

The position of the patient during the operation of turning is not very material, provided it is that which gives the operator the free use of his hand and arm. Some recommend that the patient should be placed on her hands and knees; and others, that she should lie on her back; but the usual position, i. e. on the right side, is probably as convenient as any; and during the operation it may be found convenient to change one position for another, under particular circumstances. The operation may be performed either with the right hand or the left; when the feet of the child lie forward to the forepart of the mother, the right hand will be usually found most convenient; but if the feet lie to the back of the mother, they will be most readily come at, by the operator using his left hand. Previous to commencing the operation, the arm should be laid bare, and, to facilitate its passage, the back of the hand and arm should be well smeared with some greasy substance, as pomatum, lard, sweet oil, or a lather of soap and water.

Fig. 2—Represents the same sections of the parts as the preceding drawing; in this, the hand of the operator is seen grasping both feet of the fœtus, and in the act of drawing them through the os externum, the presenting arm of the fœtus retracted, the back raised towards the fundus of the uterus, and the buttocks towards the right side.

It has been taught by most authors, to lay hold of both feet, as the turning is more readily and safely accomplished; but it will frequently happen, especially when the waters have been some time discharged, and the uterus strongly contracted round the body of the child, that we must be content to lay hold of one foot, rather than use any violence in our search for the other; a very intelligent teacher of midwifery, Mr. Radford, of Manchester, recommends in every case to turn with one foot only, believing that the extended extremity upwards secures the funis from compression during the passage of the body through the outlet.

Fig. 3—Illustrates the same section of the part, with the further advancement of the fœtus through the os externum, with the arms of the fœtus extended on each side of the head, the hand of the operator grasping the nates and thighs.



So soon as the nates are brought within the hollow of the sacrum, the case becomes precisely similar to a foot presentation ; the object of the operator will now be to give such an inclination to the body of the child as will direct the face towards the back of the mother, *the most desirable position for the passage of the head* : if the toes of the child are turned towards the belly of the mother, the head must come in an unfavourable position ; but, if the toes point towards either sacro-iliac synchondrosis, the child is already advancing favourably.

In giving this inclination to the body, it is not necessary that the parts of the child should be completely turned, an inclination towards the mother's back being sufficient. The turn should be cautiously effected, without force, and during the time of a pain.

Fig. 4.—In this figure the further progress of the child towards delivery is seen ; the head is represented in the cavity of the pelvis, the forehead turned to the hollow of the sacrum, and the occiput advancing from under the arch of the pubis, the right hand of the operator in the act of bringing down one of the arms.

In presentations of the lower extremities, and in those rendered so by the operation of turning, it is a question if it be best to deliver with the arms extended above the head, or to draw them down by manual assistance. We would say, in breech cases, where the labour has advanced slowly and without the interference of art, and in crural cases, where the os uteri has become perfectly relaxed and fully dilated, it may be attended with some advantages to bring down the arms, especially if there be any contractions of the pelvis, or the head of the child be large. But in presentations of the feet, or where the operation of turning has been performed, when from some untoward cause it has been thought expedient to hasten the passage of the body through the pelvis, it is often better not to attempt to bring the arms down, lest the os uteri should contract round the head ; or, as some suppose, round the neck of the child,* and thus impede the passage of the head, or cause the death of the child.

To bring the arms down, we pass one or two fingers over the shoulder of the child as far as the bend of the elbow (see drawing), which is then to be gently depressed, when the fore-arm usually passes through the vagina with little difficulty.

Should the operator's fingers be unable to reach the head of the elbow, or not readily dislodge the arm, it would be prudent to give up the attempt, rather than risk an injury to the child.

In first pregnancies, it will require care, as the arm passes, to guard the perinæum from laceration.

"The head being brought into the cavity of the pelvis, and the face turned to the hollow of the sacrum," the body of the infant should be raised towards the abdomen of the mother, by

*Dr. Merriman "believes that it very rarely takes place round the neck of the child," and says "when it does happen, it is round the upper part of the child's head, girding it like a band, in a line just above the nasal bones in front, and below the projection of the occipital bone behind."

placing it on the left arm of the operator, as represented in the sketch, fig. 5. The index and middle fingers of the right hand are to be placed on the neck of the child, and the index of the left in the mouth, to depress the chin ; when gentle traction in the axis of the outlet, during uterine action, will usually accomplish delivery. Should there be no uterine action, we should excite it by friction on the abdomen, or by the ergot, or the child may be lost by pressure on the navel string.*

Sometimes considerable difficulty attends the passage of the head. Should the child be affected with hydrocephalus, the fluid must be let out by the trocar or perforator, either behind the ear or at the back of the neck.

The following caution should be attended to in performing the operation of turning :—

The hand should not be introduced during a pain, but in the interval.

The os uteri ought to be dilated to the size of a half-crown, and dilatable, to justify the introduction of the hand.

Care should be taken to ascertain correctly the position of the feet, before passing the hand.

The danger in turning arises from the contraction of the uterus round the body of the child : hence, when the uterus acts powerfully (the waters being discharged), we must overcome this resistance, by exhibiting fifty or eighty minims of the tincture of opium, or three grains of the gum ; when anodynes fail, a copious bleeding may be tried. When these fail, it has been proposed to exhibit the tartarised antimony, so as to produce nausea.†

Turning ought never to be performed until the bladder and rectum have been evacuated.

The operation of turning is required when any part of the infant presents from the base of the skull to the breech ; it is also required in floodings, when the placenta is attached over the os uteri, and in some other dangerous hæmorrhages, &c.; and also in some funis presentations.

* Ryan's Midwifery.

† Ryan's Manual, page 523.

TABLE VII.B.

ILLUSTRATING THE OPERATION OF CRANIOTOMY.

Preliminary Remarks.—The cases demanding this operation are those in which there is so much disproportion between the size of the head of the child, and space within the pelvis, as not to admit the passage of the former through the latter. This disproportion may arise either from the pelvis being contracted, or from the extraordinary bulk of the infant's head, or from tumor, &c. in the parturient passages: the former is the most frequent cause.

The precise diameter of the pelvis through which an infant at the full term of gestation can pass, without reducing the bulk of the head, has not been accurately nor satisfactorily determined. Dr. Clarke, of Dublin, says that $3\frac{1}{4}$ inches from pubes to sacrum is the least diameter through which he has known a full-grown fœtus to pass entire.* Dr. Osborn says $2\frac{3}{4}$ inches.† But the term *full-grown* fœtus is indefinite and unsatisfactory as regards the size of the fœtus; for one full-grown fœtus may readily pass through a diameter of $2\frac{3}{4}$ inches, whereas another would with difficulty pass a diameter of $3\frac{1}{4}$ inches; such is the disproportion between children born at full maturity: we can at all times more readily measure the diameter of the pelvis than ascertain the dimensions of the fœtal head.‡ Dr. Ryan says (Manual of Midwifery), "If the sacro-pubic diameter is only $2\frac{1}{2}$ inches, and the transverse or bis-iliac 3 inches, craniotomy is justifiable; but if the short diameter is only $1\frac{1}{2}$ inch, the operation would be useless, and dangerous."

Dr. D. Davis (Vide Elements of Operative Midwifery) has invented an instrument which he denominates the *osteotomist*, for breaking down the fœtal skull and bringing it away piecemeal. With this instrument he considers it practicable to deliver in cases of extreme distortion, when the diameter is less than two inches; and also recommends its use for breaking down the skull in preference to using much force, in cases less contracted.

Craniotomy may also be indicated if the fœtus be dead, and the parturient passages so contracted as to preclude the possibility of delivery either by the forceps, lever, or by turning, or when the head remains in the pelvis, and the hand, forceps, or blunt hook is insufficient for its extraction. This operation may now and then be demanded in face presentations and preternatural labours, when the head is too large to pass the superior aperture of the pelvis.

The time when the operation of craniotomy should be performed, must depend, in every case, on the state of the patient. It has been frequently performed too late to save the life of the patient. In cases of distorted pelvis affording no possible chance of a natural delivery, we should have recourse to the perforator so soon as the orifice of the uterus is sufficiently dilated to admit of its convenient and safe employment; but in cases of doubtful sufficiency of space to admit of a living birth, we must delay the operation so long as any chance remains of a natural delivery, consistent with the safety of the mother.

* See Transactions of the Dublin Association, &c. vol. i, p. 374.

† Essays on Midwifery (1794), p. 194.

‡ On the mode of measuring the pelvis, see Tab. III, Obstetric Tables.

DESCRIPTION OF TABLE VII.B.

Fig. 1—Represents the lower part of the abdomen, &c. the female lying in the dorsal position, with the left hand of the operator in the vagina, guiding the point of the perforator.

The operation of craniotomy may be performed when the patient is lying in the usual position, 'left lateral,' or as here represented; the latter is the most convenient for the operation.

On commencing the operation, an assistant should make gentle pressure on the abdomen, so as to keep the uterus steady and the head of the *fœtus* fixed during the operation.

The first part of the operation consists in introducing two or more fingers of the left hand into the vagina, then to carry them forward and place them, if possible, on the sagittal suture or anterior fontanelle, then introduce the perforator, and pass it along the palm and fingers till it reaches the head, and, with a semi-rotatory motion, penetrate the integuments and gently push forward the instrument, till it reaches the stops. (See C. fig. 2.)

On turning aside the parts of the drawing marked A, the relative positions of the *fœtus*, *pelvis*, &c. are brought into view, the anterior part of the uterus, &c. being removed, to demonstrate the situation of the *fœtal* head and bones of the pelvis, &c.

Fig. 2.—B. The head of the *fœtus*. C. The *Symphysis pubis*.

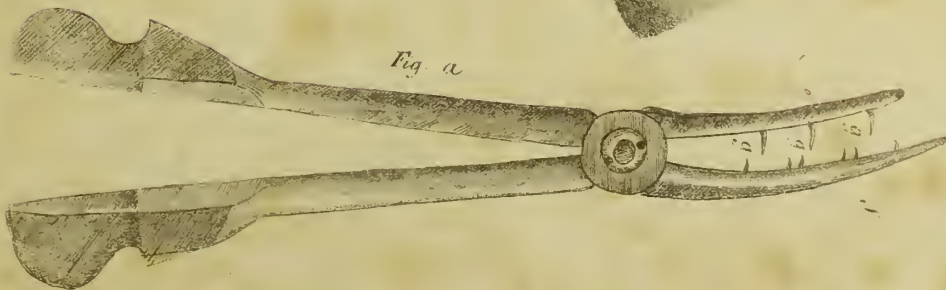
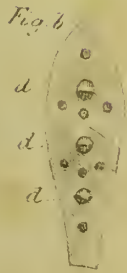
D. The *Sacrum*. E. The upper part of the *Vagina*.

F.F.F.F. The cut edge of the *Uterus* and *Vagina*.

The perforator being passed to the stops, or rests, we are now to open the blades to the extent of an inch or two, close them, and open them again transversely, so as to make a crucial incision. (See fig. 3, on turning down fig. 2.) The cerebral mass is now to be broken up by moving the blades in various directions. The blades should now be closed, and the instrument gently withdrawn from the vagina. The brain now generally escapes, the bulk of the head becomes considerably reduced, and the child may be expelled by the uterine contractions, without further interference. Should this not take place, unless some untoward symptoms demand immediate delivery, we may wait for some hours without any further interference, during which time the contents of the head will be forced out by the contraction of the uterus, the bulk of the head reduced, and the child may be expelled by the parturient pains; should this desirable circumstance not follow, the crochet or craniotomy forceps must be applied, to complete the delivery. (See fig. 4, on turning down fig. 3.)

Fig. 4.—Represents the same section of the parts described in fig. 2, with the crotchet introduced into the perforation of the cranium, and the

TABLE VII.B.



left hand of the operator in the vagina, to guard the passages against laceration, should the instrument slip from its hold, in drawing the infant through them.

The modern craniotomy forceps have now nearly superseded the crotchet,* as an extracting instrument; with the former we are enabled to use more power, with much less risk of doing violence to the parturient passages, and whichever instrument might be used, we must, in every stage of the extraction, draw down the head in the direction of the axis of the pelvis with great caution. The extracting force should be very moderate at first, but may be gradually augmented according to the exigency of the case. The operator should examine from time to time during the extraction if there be any pointed pieces of bone projecting beyond the integuments which might wound the passages; if so, they should be cautiously removed.

* There are many modifications of the craniotomy forceps recommended by obstetric teachers: of those we have seen, we give the preference to the forceps improved by Mr. Holmes. Fig. *a*. Table VII, is a sketch of that gentleman's forceps; he says, "they are to be introduced closed, till the point of the concave blade *h* reaches the perforation; it is purposely made longest, that it may slide over the outside, while the convex blade *i* begins to open and enter the perforation: this blade, *i*, is furnished with three chisel-shaped teeth *f.f.f.*; they enter, while closed, three corresponding holes, *k.k.k.* in the opposite blade. Fig. 3 shews the inner faces of the blade *h* and *i*; smaller pointed teeth are also fixed in the blade *h*, with small corresponding holes in the blade *i*; these secure the integuments, while the three chisel-shaped teeth pass through the bones of the head, and enter the perforations in the blade *h*."

FINIS.



